

**2005 ANNUAL REPORT OF  
ELECTRIC SERVICE RELIABILITY  
FOR**

**Interstate Power and Light Company**

**May 31, 2006**

**[411.120 b) 3) A)]:**

**A plan for future investment and, where necessary, reliability improvements for the jurisdictional entity's transmission and distribution facilities that will ensure continued reliable delivery of energy to customers and provide the delivery reliability needed for fair and open competition, along with the estimated cost of implementing the plan and any changes to the plan from the previous annual report.**

- i. The plan must cover all operating areas, including a description of the relevant characteristics of each operating area and the age and condition of the jurisdictional entity's equipment and facilities in each operating area.

**Dubuque Zone**

The Illinois portion of Interstate Power and Light's (IPL's) Dubuque Zone consists of seven distribution substations that feed a total of sixteen (16) distribution circuits (14 IPL-owned and 2 customer-owned). There is a total of 185 miles of distribution line on the IPL-owned feeders. Distribution voltages are 4.16kV, 12.47kV or 13.8kV.

The Sandridge substation is dedicated to serving a single industrial customer. There are two 4.16 kV customer-owned feeders that exit this substation. The other 6 substations (East Dubuque, Frentress Lake, West Galena, Downtown Galena, Longhollow and Elizabeth) serve the towns of Galena, East Dubuque, and Elizabeth and some neighboring rural areas.

IPL also provides service to the Municipal Utility of Hanover. The Elizabeth substation has a 69/34.5 transformer that serves a radial 34.5kV line to the city of Hanover's distribution substation. This 34.5 kV line is approximately 6.5 miles long and is owned by IPL.

The distribution substations are 69 kV on the high side. IPL owns 14.26 miles of the 69 kV lines that serve the distribution substations. The remaining 69 kV lines serving IPL substations are owned by Dairyland Power. The East Dubuque, Frentress Lake, Sandridge, West Galena and Downtown Galena substations are fed from the IPL-owned 69 kV system. The Longhollow and Elizabeth substations are fed from the Dairyland Power-owned 69 kV system.

The 69 kV system is fed by the Galena 161/69 kV substation, owned by Dairyland Power Cooperative. The 161 kV line serving the Dairyland Power 161/69 kV Galena substation runs from Dubuque, IA through Galena, and ultimately crosses the Mississippi River into Clinton, IA. The Illinois portion of the 161kV line is 73 miles long and owned by IPL. IPL has no transmission substations in the Dubuque Zone of our Illinois service territory.

The age and condition of this equipment is discussed in Section 411.120 b) 3) G) i below.

**Clinton Zone**

The Illinois portion of Interstate Power and Light's Clinton Zone includes the towns of Savanna, Mount Carroll, Thompson, Chadwick, and rural areas in-between.

A 161 kV and 138 kV networked transmission system supplies the region. There is one 161/138 KV substation (Albany) and two 161/34 kV substations (York and Savanna). The Albany transmission substation ties the Com Ed 138 KV system to the IPL 161 KV system. There are 40 miles of 34.5 KV sub-transmission lines from the York and Savanna substations that loop through the region to serve several 13.8 kV, 12.5 kV and 4.16 kV distribution substations.

Two distribution substations are dedicated to single industrial customers and City of Albany Municipal is served from the Albany substation. The town of Savanna is served by the Savanna East, North Savanna, Savanna 3<sup>rd</sup> Street, and Eaton substations. The remaining substations, Savanna 161 kV, York, Argo Fay, and Mt. Carroll, feed the rural area in the region. There are 20 distribution feeders in the region that are typical distribution feeders with a total of 306 miles of line.

The age and condition of this equipment is discussed in Section 411.120 b) 3) G) i below.

**ii. The plan shall cover a period of no less than three years following the year in which the report was filed.**

IPL's plan to support continued reliable electric service consists of two parts. The first part is recurring, engineering, maintenance, and operations activities. The second part is unique projects developed to address specific situations. Recurring activities may generate a follow-up project. In this report, unique projects are covered by zone following the discussion of programmatic reliability efforts.

IPL is committed to reliable service to our customers and has operating practices in place to monitor equipment and events that may affect reliability. Many of these periodic practices are similar to other utilities such as tree trimming, line inspections, system peak load reviews, etc.

Some examples of additional steps that IPL takes to maintain overall reliability, and improve pockets of poor performance, are discussed below.

**Substation Predictive Maintenance program including:**

- Infrared Substation Surveys
- Ultrasonic Surveys
- Vibration Analysis
- Dissolved Gas in Oil Analysis
- Predictive Maintenance

The following corrective actions were taken in 2005 due to items identified in IPL's inspection and testing program.

### Repairs Resulting from Substation Predictive and Preventive Maintenance Program

Substation	Action Taken	Date Completed
Albany	Cleaned and tightened seal on breaker bushing. Cleaned and greased 2 switches.	7/5/2005
East Dubuque	Filled in washouts with gravel. Grounded fence. Added spare fuses to substation.	8/19/2005
Elizabeth	Replaced fan on transformer.	3/24/2005
Galena Downtown	Added oil to LTC, changed high side arrestor on transformer and 2 arrestors on sub risers.	9/22/2005
Sandridge	Replaced nitrogen tank on transformer with ltc. Added water to battery, replaced fuse on ltc control.	8/26/2005
Savanna 161	Changed nitrogen tank twice on transformer without ltc. Changed nitrogen tank on transformer with ltc.	2/9/2005 & 4/7/2005 12/19/2005
Savanna 3 <sup>rd</sup> Street	Changed nitrogen tank 3 times on breaker. Repaired compressor on breaker.	1/13/2005, 2/9/2005, 7/8/2005 1/26/2005
West Galena	Replaced change over selector in transformer with ltc. Replaced ltc monitor board and motor capacitor.	2/23/2005 3/18/2005
York	Repaired oil leak on 3 regulators. Repaired oil leak on regulator gauge, installed rebuild kit on breaker control valve. Added oil to LTC. Repaired battery voltage transducer.	2/3/2005 2/17/2005  10/12/2005 11/14/2005

### **Zone Reliability Teams**

In each operating zone, IPL has established a “Zone Reliability Team” (ZRT) tasked with maintaining reliability and correcting pockets of poor performance. The team consists of the Manager of Customer Service, Manager of Substation Maintenance, Distribution Engineer, Delivery System Planner, and others as needed. Generally, teams meet at least once per quarter.

The ZRT reviews historical electric reliability reports (discussed in more detail below) and individuals share their knowledge of activity in the zone to look for improvement opportunities. The advantage to the team based approach is that it allows more efficient asset management. A proposed solution can be reviewed from various perspectives, i.e. reliability, maintenance, construction, load growth, life expectancy, etc., to identify the most appropriate corrective plan.

Generally the teams recommend an action plan to correct a near term reliability challenge with maintenance steps. However, the team may identify small and even large capital projects for service and reliability improvement.

The ZRT also creates and maintains contingency switching procedures for alternate system configurations to serve customers. In the event of a large equipment failure, service can be more quickly restored to customers because loads have been reviewed and these procedures developed.

### **Historical Reliability Review**

Reports of historic outages are provided periodically to the ZRT. For example, the manager of customer service is notified of outages with more than 30,000 customer minutes or which last longer than 120 minutes for overhead systems or 180 minutes for underground systems.

Additional reports show customers with a larger than typical number of outages, or feeders or devices with a larger than typical number of outages over a period of time. From this data, the ZRT can target maintenance or operations efforts as appropriate that can greatly improve individual customer reliability.

### **Dubuque Zone Engineering Study**

A transmission study completed in 2003, which included the NW corner of Illinois, recommended the installation of a second 161/69 kV transformer at the Dairyland Power (DPC) Galena substation to alleviate overloading of the existing transformer under certain contingencies. This transformer has been installed. This impacts the IPL service area because this substation provides voltage support to the underlying distribution substations served by IPL in Illinois.

A recent study of the Illinois distribution feeders and substations in the Dubuque zone was performed to:

- 1) Identify deficiencies under normal peak conditions and recommend solutions.
- 2) Make recommendations to allow complete feeder backup where possible.
- 3) Recommend system enhancements to accommodate load projections out to 2013.
- 4) Recommend enhancements to accommodate alternate feeds in the event of substation equipment failure.

The table in Section 411.120 b) 3) A) iv) lists planned projects recommended by this distribution study. IPL evaluates and prioritizes capital investment projects on a case-by-case basis using considerations discussed in the response to Section 411.120 b) 3) A) viii). Projects designed to provide contingency backup and provide capacity for future growth some years into the future and not required for normal capacity, voltage support, or system condition have a lower priority. Most of the projects proposed by the study and shown in the table in section 411.120 b) 3) A) iv) fall into this lower priority category. Striking a balance between reliable and economical service to our Illinois customers means that the investments recommended in the study will not occur until area load growth makes them necessary.

### **Clinton Zone Engineering Study**

Due to the slow rate of growth in the Illinois portion of the Clinton Zone, no formal planning study has been conducted in this area. However, IPL continuously monitors system loads and performance to identify any maintenance or capital projects that may be necessary. Substation and circuit loading levels are reviewed annually following the system peak, and any substation transformer exceeding 80% of its nameplate loading or any circuit exceeding 300 amps will be cause to review that substation or circuit and identify remedial action.

The table in Section 411.120 b) 3) A) iv) lists projects planned in the Clinton Zone. New projects may be identified by the on-going processes listed in section 411.120 b) 3) A) ii) above.

- iii. **The plan shall identify all foreseeable reliability challenges and describe specific projects for addressing each.**

### **Dubuque Zone**

Challenges and specific projects from the Dubuque Zone study are as follows:

#### **East Dubuque – Frentress Lake Area**

The following items were the recommendations for the East Dubuque-Frentress Lake area.

- Add a capacitor bank in the range of 600 kVAR near the end of FRLK8343 by 2011 or when actual load growth meets the levels assumed in the study.
- Consider adding a capacitor bank in the range of 600-kVAR on the North circuit near the Illinois-Wisconsin border by 2013 or when actual load growth meets the levels assumed in the study.

### **West Galena – Downtown Galena Substation Area**

To accommodate load growth and expedite outage restoration time, several options were studied. The least cost options are recommended for implementation.

The following list of projects will provide both feeder and substation outage backup support through 2013. These projects are not needed for normal system conditions.

- Consider installing three-phase URD for Galena Industrial Park Backup (1200 Ft.).
- To allow second substation backup, consider adding a second transformer (12/20 mva) to West Galena Sub.
- To allow complete feeder backup, consider splitting GALW8317 into two feeders.

### **Longhollow – Elizabeth Substation Area**

The Elizabeth substation had a transformer change out, main breaker upgrade and a regulator upgrade in the Spring of 2004. The Elizabeth substation location has two transformers. They are a 69/34.5kV and a 69/12.5kV unit. A 34.5/12.5 kV transformer was replaced with a 69/12.5kV unit. This change simplifies backup requirements for loss of the 69/34.5 kV transformer.

The study recommended equipment upgrades to the Longhollow-Elizabeth area, as well. Voltages are shown to sag under peak load conditions in the Galena Territory resort. The study made several phase balancing recommendations to improve system voltages in this area. These phase-balancing recommendations were implemented.

In order to facilitate further load balancing and enable backup of the West Territory feeder from the East Territory feeder under contingency, a capacitor bank and 0.55 miles of three-phase underground is recommended.

The recommended upgrades will also enable the Longhollow substation to be backed up from the Elizabeth substation. However, upgrading the Longhollow substation to back up the Elizabeth substation is not recommended due to high cost.

The following table contains projects recommended by planning study and additional projects selected based on their ability to improve system performance at the most reasonable cost.

Project	Reason	Est. Cost	Planned Year	Status
Longhollow Ckt 83-70, Add 219 amp Bi-directional Regulators	To provide load backup to Longhollow and Elizabeth substation loads.	\$42,000	2004	Completed
Elizabeth Sub, Replace 219 amp Regulators to 328 amp units	To enable backup of Longhollow substation load.	\$39,000	2004	Completed
West Territory Ckt 83-46, add 0.55 mi, 3 ph., #2 ACSR URD	Raise voltage to acceptable levels under peak when load growth warrants	\$41,259	2008	**
Install 3 ph URD for Galena Industrial Park Backup (1200 Ft.)	Provide backup to Galena Industrial Park	\$24,224	2010	**
West Territory Ckt 83-46, add 450 kVAr Capacitor Bank	Raise voltage to acceptable levels under contingency.	\$4,800	2008	**
West Galena Sub Add Second Xfmr (12/20 mva) when needed based on area load growth	Provide load backup for loss of existing bus transformer or bus of the West Galena or Downtown Galena subs with future load growth.	\$540,000	2009 - 2015	**
Split Galena West End Feeder 83-17 into two Feeders	Reduce outage exposure and provide better backup from Downtown Galena substation.	\$20,000	2008	**
Longhollow Substation, Upgrade to 328 amp Regulators	To provide contingency backup capacity of adjacent circuits.	\$39,000	2008	**

\*\* These projects are projects which are not needed until peak load growth meets a specific level or are recommended only to provide backup in the case of substation or whole circuit failure. They are not required to serve existing loads. As such, the current potential benefit in reliability to customers does not justify their cost at this time.

However, having these plans in place allows for items to be implemented when circumstances make it convenient or less costly to do so or when load growth requires system improvements. For example, if a regulator in the Elizabeth substation were to fail, the plan allows us to know that replacing the failed unit with a 328-amp unit rather than with an identical replacement would have the added benefit of allowing backup for the Longhollow substation circuits.

### **Clinton Zone**

The list of projects below represents the current planned improvements for IPL-Illinois Clinton zone. These projects were selected over other alternatives based on their ability to improve system performance at the most reasonable cost.

Project	Est. Cost	Year	Status
Savanna 161-34.5 kv Replace 11 Structures	\$63,000	2004	Completed
Savanna 161-34.5 kv, 8Mi Structure Improvement	\$104,000	2004	Completed
Oakville Rd Rural Rebuild 1.8Mi3PH	\$43,000	2008	Planned for 2008.
Clinton York Sub Metering	\$30,000	*	This project has been cancelled. *

\* This project will be done with a new transformer installation that is on hold until the customer the transformer is designed to serve (Thomson Correctional Facility) begins operations.

**iv. The plan shall provide a timetable for achievement of the plan's goals.**

The timetable for the projects identified is given in the table in Section 411.120 b) 3) A) iii.

**v. The plan shall report and address all unresolved reliability complaints about the jurisdictional entity's system received from other utilities, independent system operators, and alternative retail electric suppliers.**

IPL has no unresolved reliability complaints in Illinois.

**vi. The plan shall report the specific actions, if any, the jurisdictional entity is taking to address the concerns raised in such complaints received from other utilities, independent system operators, and alternative retail electric suppliers.**

IPL has not received any complaints from any other utilities, ISO's or ARES's. However, any complaints received will be promptly investigated and appropriate corrective actions will be taken.

**vii. The plan must consider all interruption causes listed in Section 411.120(b)(3)(D).**

Interruptions from all causes are recorded and used in preparing reports to be reviewed by the Zone Reliability Teams.

**viii. The plan must consider the effects on customers and the cost of reducing the number of interruptions reported as required by Section 411.120(b)(3)(C).**

Projects which are necessary to maintain capacity and voltage support under normal switching conditions are assigned a required in-service date to ensure adequate service to customers continues to be provided. Other projects are prioritized using a benefit/cost ratio, which takes into account the expected reduction in outage frequency and duration, as well as the number of customers that will experience the outage reduction. The anticipated outage reductions are quantified and compared with project costs, which ensures the projects with the greatest direct benefit to customers compared to cost are done first.

**[411.120 b) 3) B)]:**

**A report of the jurisdictional entity's implementation of its plan filed pursuant to subsection (b)(3)(A) for the previous annual reporting period, including an identification of significant deviations from the first year of the previous plan and the reasons for the deviations.**

The status of planned improvements in last year's report in the table in document 411.120b) 3) A) iv) are shown in the table in that section of this report.

**[411.120 b) 3) C)]:**

**The number and duration of planned and unplanned interruptions for the annual reporting period and their impacts on customers.**

**Planned and Unplanned Interruptions in 2005**

<b>Interruption Type</b>	<b>Number of Interruptions</b>	<b>Average Duration (per customer interruption)</b>
Intentional	7	43 minutes
Unplanned	238	162 minutes

In 2005 IPL had seven (7) intentional outages. Of the seven outages, five were scheduled outages to support the maintenance and operations of the system. The other two outages were emergency repair intentional outages. A total of 50 customers were impacted with outages between 4 and 134 minutes. Since the intentional outages resulted in repair or replacement of a piece of equipment, overall impact to customers was positive since the intentional outage probably decreased unplanned outages in the future.

While the count of unplanned events is up, fewer customers were impacted per event with the result that less than 10% of IPL customers experienced more than one sustained interruption of any kind in 2005 (compared to 14% in 2004). More detail and discussion regarding unplanned outages is given in later sections of this report.

**[411.120 b) 3) D)]:**

**The number and causes of controllable interruptions for the annual reporting period.**

As agreed upon by the Illinois electric utilities and the ICC in a letter dated April 21, 2004, IPL will provide information on all outages to customers in 2005. This information is provided in a supplement to the annual reliability report included in Appendix A.

**[411.120 b) 3) E)]:**

**Customer service interruptions that were due solely to the actions or inactions of another utility, another jurisdictional entity, independent system operator, or alternative retail electric supplier for the annual reporting period.**



IPL's Illinois customers experienced one event in 2005 that was caused by failure of a transmission substation transformer owned by Dairyland Power Cooperative. This outage affected 3,034 IPL Illinois customers in the Dubuque Zone for 4 minutes.

**[411.120 b) 3) F):**

**A comparison of interruption frequency and duration for customers buying electric energy from the jurisdictional entity versus customers buying electric energy from another utility or alternative retail electric supplier for the annual reporting period. A jurisdictional entity may base this comparison on each customer's supplier as of December 31. A jurisdictional entity need not include this information for customers whose electric energy supplier is not known to the jurisdictional entity.**

At this time, IPL has no customers that receive power from another utility or an alternative retail electric supplier.

**[411.120 b) 3) G):**

**A report of the age, current condition, reliability and performance of the jurisdictional entity's existing transmission and distribution facilities, which shall include, without limitation, the data listed below. In analyzing and reporting the age of the jurisdictional entity's plant and equipment, the jurisdictional entity may utilize book depreciation. Statistical estimation and analysis may be used where actual ages and conditions of facilities are not readily available. The use of such techniques shall be disclosed in the report.**

- i. A qualitative characterization of the condition of the jurisdictional entity's system defining the criteria used in making the qualitative assessment, and explaining why they are appropriate.**

Based on experience, IPL has found that pole age is one indicator of the overall condition of the overhead distribution system, including conductors, switches, grounding, anchors, transformers, etc. Based on asset accounting records, the IPL-Illinois distribution system has nearly 15,900 poles with an estimated average age of approximately 26 years. Asset accounting records for distribution poles are not available going back farther than 50 years. There are distribution poles older than 50 years, but the exact number of these is unknown.

IPL-Illinois has 1,874 transmission poles in-service with an estimated average age of approximately 20 years. Of the 1,874 poles, 221 have an unknown installation year. The poles are assumed to be over 50 years of age but exact age is not available. Through the use of pole testing data IPL has determined that poles typically have a life expectancy of about 60 years. Because very few poles are estimated to be over 50 years old, the condition of the system is considered to be in good condition.

As with the overhead system, IPL's experience has shown that cable age is also a good indicator for the overall condition of the underground distribution system. Based on asset accounting records, the IPL Illinois system has 71 miles of cable in-service with an average age of approximately 9 years. With this average age, the system can be considered to be in good condition.

The IPL delivery system also includes 3 transmission and 18 distribution substations. Based on condition assessments of the major components, infrared scans, major component age and existing corrective and preventative maintenance activities, each of these stations is currently in good working order.

Station Equipment	Average Age*
Battery Systems	13
Power Transformers	28
Reclosers	10
Voltage Regulators	13

\* Average age is an estimate based on information contained in Alliant Energy's maintenance management system.

**ii. & vii. A summary of the jurisdictional entity's interruptions and voltage variances reportable under this Part, including the reliability indices for the annual reporting period; and**

**The corresponding information, in the same format, for the previous 3 annual reporting periods, if available.**

IPL has no record of voltage variations meeting the definition of "power fluctuation" in Section 411.20.

	IPL-IL System			
	2002	2003	2004	2005
SAIFI	0.84	1.22	0.64	0.54
CAIDI (minutes)	104.8	100.2	77.2	161.5
CAIFI	2.13	1.74	1.4	1.3

2005 SAIFI and CAIFI values were better than previous reporting years. The impact of this on customer experience will be shown in the response to Section 411.120 b) 3) K which shows that fewer than 10% of IPL Illinois customers experienced even two sustained outages.

A large thunderstorm system moved through IPL's Illinois territory late in the night of June 4<sup>th</sup> and early morning of June 5<sup>th</sup>, 2005. This storm had wind gusts from 64 mph recorded in Dubuque, IA to 48 mph in Clinton, IA and 34 mph in Savanna, IL and caused many concurrent outages. This single event accounted for over 22% of the number of customer interruptions and over 48% of the customer minutes of interruption in IPL's Illinois territory for 2005.

In many events, personnel from Iowa can be dispatched to assist in restoration of Illinois outages. However, during this event, IPL's entire Dubuque Zone (Iowa and Illinois) suffered 60 storm-related outages accumulating over 1 million customer-outage-minutes. Restoration times became long because the many outages overwhelmed the available manpower in the entire area.

This can be seen in the 2005 CAIDI value. The event had the greatest impact in the Dubuque zone, but impacted the entire IPL – Illinois territory. If this event is subtracted from the calculations, the 2005 CAIDI becomes 107 minutes, which is comparable to that achieved in 2002 and 2003.

Outage information for 2002 – 2005 broken up by cause categories is provided in Appendix A.

- iii. & vii. The jurisdictional entity's expenditures for transmission construction and maintenance for the annual reporting period expressed in constant 1998 dollars, the ratio of those expenditures to the jurisdictional entity's transmission investment, and the average remaining depreciation lives of the entity's transmission facilities, expressed as a percentage of total depreciation lives; and

The corresponding information, in the same format, for the previous 3 annual reporting periods, if available.

**Annual IPL Transmission Expenditures (1998 \$)\***

	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
Construction	\$ 25,730	\$ 240,344	\$ 749,110	\$ 96,659
O&M	\$ 471,890	\$ 463,358	\$ 530,316	\$ 600,344
Total	\$ 497,621	\$ 703,702	\$ 1,279,426	\$ 697,002

**IPL Ratio of Annual Transmission Expenditures to  
Total Transmission Investment  
(1998 \$) \***

	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
Transmission Investment	\$ 13,830,512	\$ 14,450,119	\$ 14,440,372	\$ 13,816,921
Ratio (Total Expenditures/ Trans Investment)	3.6%	4.9%	8.9%	5.0%

*Annual inflation rate for	<u>Year</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>
1999 - 2005 is as shown:	Rate	4.48%	2.50%	1.88%	2.38%	1.55%	3.39%	2.68%

\*2004, 2005 inflation equal to BLS Producer Price Index for Electric Power Distribution Industry  
2003 - 1999 inflation information obtained from the Ibbotson Associates 2004 SBBI Yearbook.

**IPL Illinois Transmission Plant Remaining Depreciation Life**

Acct	Description	Year	Plant in Service 12/31	Average Age	Average Remaining Depreciation Life (Yrs)	Average Remaining Depreciation Life (Percent)
352	Structures & Improvements	2002	\$86,422	21.4	23.6	52%
		2003	\$116,891	22.1	22.9	51%
		2004	\$115,571	23.1	21.9	49%
		2005	\$115,571	24.1	20.9	46%
353	Substation Equipment	2002	\$6,304,398	11.8	24.2	67%
		2003	\$7,145,349	12.3	23.7	66%
		2004	\$7,167,213	13.3	22.7	63%
		2005	\$7,213,539	14.3	21.7	60%
354	Towers & Fixtures	2002	\$1,648,478	15.3	49.7	76%
		2003	\$1,648,478	16.3	48.7	75%
		2004	\$1,648,478	17.3	47.7	73%
		2005	\$1,648,478	18.3	46.7	72%
355	Poles & Fixtures	2002	\$3,695,321	19.2	24.8	56%
		2003	\$3,695,321	20.0	24.0	55%
		2004	\$3,839,117	21.0	23.0	52%
		2005	\$3,581,912	22.0	22.0	50%
356	OH Conductor and Devices	2002	\$3,435,538	20.8	22.2	52%
		2003	\$3,551,871	21.4	21.6	50%
		2004	\$3,804,710	22.4	20.6	48%
		2005	\$3,631,934	23.4	19.6	46%
358	UG Conductor and Devices	2002	\$79,874	9.0	26.0	74%
		2003	\$79,874	9.8	25.2	72%
		2004	\$79,874	10.8	24.2	69%
		2005	\$79,874	11.8	23.2	66%

2002 Average age was based on weighting of plant in service balances by vintage.

2003 Remaining Life comes from Depreciation Study Performed by Gannett Fleming.

Average Age take the Average Service Life from the Study and subtracts the Remaining Life.

2005 Average age values are 2004 values incremented by one year, a "worst case" estimate.

- iv. & vii. The jurisdictional entity's expenditures for distribution construction and maintenance for the annual reporting period expressed in constant 1998 dollars, the ratio of those expenditures to the jurisdictional entity's distribution investment, and the average remaining depreciation lives of the entity's distribution facilities, expressed as a percentage of total depreciation lives; and

The corresponding information, in the same format, for the previous 3 annual reporting periods, if available.

**Annual IPL Distribution Expenditures (1998 \$)\***

	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
Construction	\$ 841,086	\$ 1,297,773	\$ 664,590	\$ 967,943
O&M	\$ 441,444	\$ 725,630	\$ 730,201	\$ 476,999
Total	\$ 1,282,529	\$ 2,023,403	\$ 1,394,791	\$ 1,444,942

**IPL Ratio of Annual Distribution Expenditures to  
Total Distribution Investment  
(1998 \$) \***

	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
Distribution Investment	\$ 22,396,116	\$ 23,399,462	\$ 23,019,176	\$ 22,956,187
Ratio (Total Expenditures/ Distrib Investment)	5.7%	8.6%	6.1%	6.3%

*Annual inflation rate for 1999 - 2005 is as shown:	<u>Year</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>
	Rate	4.48%	2.50%	1.88%	2.38%	1.55%	3.39%	2.68%

\*2004 and 2005 inflation equal to BLS Producer Price Index for Electric Power Distribution Industry.  
2003 - 1999 inflation information obtained from the Ibbotson Associates 2004 SBBI Yearbook.

### IPL Illinois Distribution Plant Remaining Depreciation Life

Acct	Description	Year	Plant in Service 12/31	Average Age	Average Remaining Depreciation Life (Yrs)	Average Remaining Depreciation Life (Percent)
361	Structures & Improvements	2002	\$148,572	14.7	30.3	67%
		2003	\$211,560	15.6	29.4	65%
		2004	\$211,504	16.6	28.3	63%
		2005	\$211,504	16.7	28.3	63%
362	Substation Equipment	2002	\$5,254,030	2.7	20.3	88%
		2003	\$5,129,134	3.7	19.3	84%
		2004	\$5,732,833	4.7	18.3	80%
		2005	\$5,789,617	4.7	18.3	80%
364	Poles, Towers & Fixtures	2002	\$5,942,366	12.1	31.9	73%
		2003	\$6,165,806	12.5	31.5	72%
		2004	\$6,298,687	13.5	30.5	69%
		2005	\$6,453,606	14.1	29.9	68%
365	OH Conductors & Devices	2002	\$5,333,027	10.2	19.8	66%
		2003	\$5,594,401	10.3	19.7	66%
		2004	\$5,902,715	11.3	18.7	62%
		2005	\$6,096,349	12.2	17.8	59%
366	Underground Conduit	2002	\$341,617	3.8	28.2	88%
		2003	\$348,671	6.9	25.1	78%
		2004	\$362,514	7.9	24.1	75%
		2005	\$369,441	5.8	26.2	82%
367	UG Conductors & Devices	2002	\$3,007,625	6.4	21.6	77%
		2003	\$3,091,098	6.9	21.1	75%
		2004	\$3,166,410	7.9	22.1	74%
		2005	\$3,375,974	8.4	19.6	70%
368	Line Transformers	2002	\$2,842,861	10.4	23.6	69%
		2003	\$2,818,877	10.6	23.4	69%
		2004	\$2,824,731	11.6	22.4	65%
		2005	\$2,836,531	12.4	21.6	64%
369	Services	2002	\$654,727	9.3	28.7	76%
		2003	\$694,696	9.4	28.6	75%
		2004	\$668,424	10.4	27.6	71%
		2005	\$789,329	11.3	26.7	70%
370	Meters	2002	\$1,061,448	20.7	24.3	54%
		2003	\$1,061,448	20.9	24.1	54%
		2004	\$1,061,448	21.9	23.1	51%
		2005	\$1,061,448	22.7	22.3	50%
373	Street Lighting & Signaling	2002	\$722,760	4.6	20.4	82%
		2003	\$740,510	4.9	20.1	80%
		2004	\$740,558	5.9	19.1	76%
		2005	\$759,233	6.6	18.4	74%

2002 Average age was based on weighting of plant in service balances by vintage.  
 Remaining Life comes from Depreciation Study Performed by Gannett Fleming.  
 Average Age take the Average Service Life from the Study and subtracts the Remaining Life.

- v. & vii. **The results of a customer satisfaction survey completed during the annual reporting period and covering reliability, customer service, and customer understanding of the jurisdictional entity's services and prices; and**

**The corresponding information, in the same format, for the previous 3 annual reporting periods, if available.**

The table below shows the mean rating, out of 10, by customer class.

	2005 Results		2004 Results		2003 Results		2002 Results	
	Residential	Non-Residential	Residential	Non-Residential	Residential	Non-Residential	Residential	Non-Residential
Reliability	8.80	8.93	8.81	8.93	8.82	8.78	8.56	8.82
Service	8.73	8.94	8.79	8.86	8.70	8.65	8.48	8.80
Rates	7.21	7.36	7.53	7.27	7.42	7.83	6.94	7.37

- vi. & vii. **An overview pertaining to the number and substance of customers' reliability complaints for the annual reporting period and their distribution over the jurisdictional entity's operating areas; and**

**The corresponding information, in the same format, for the previous 3 annual reporting periods, if available.**

There have been no reliability-related complaints from Illinois customers in IPL's Clinton Zone for the years 2002 – 2005. A complaint summary for the Dubuque Zone is shown below.

Zone	Substance of Complaints	Number of Complaints			
		2005	2004	2003	2002
Dubuque	Outage Frequency	0	3	2	0
Dubuque	Voltage Flicker	0	0	2	0
Dubuque	Low Voltage	0	0	1	0

**[411.120 b) 3) H):**

**A table showing the achieved level of each of the three reliability indices of each operating area for the annual reporting period (provided however, that for any reporting period commencing before April 1, 1998, a jurisdictional entity will not be required to report the CAIFI reliability index).**

	Clinton Zone				Dubuque Zone				IPL-IL System			
	2002	2003	2004	2005	2002	2003	2004	2005	2002	2003	2004	2005
SAIFI	0.66	1.29	0.78	0.41	1.04	1.15	0.5	0.66	0.84	1.22	0.64	0.54
CAIDI (min)	101.4	115.4	71.7	100.1	107.3	82.6	85.5	197.0	104.8	100.2	77.2	161.5
CAIFI	2.59	1.55	1.51	1.23	1.89	2.04	1.26	1.34	2.13	1.74	1.4	1.3

**[411.120 b) 3) I):**

A list showing the worst performing circuits for each operating area for the annual reporting period with the understanding that the designation of circuits as “worst-performing circuits” shall not, in and of itself, indicate a violation of this Part.

**2005 Worst Performing Circuits for IPL**

Zone	Circuit	Nominal Voltage	Substation	Area Served	Rural or Urban	Number of Customers Served	Year	SAIFI	CAIFI	CAIDI
Clinton	MTCL8117	13.8	Mount Carroll	Rural areas South and Southeast of Mount Carroll	Rural	122	2005	1.16	2.47	136.2
							2004	0.07	1.29	98.9
							2003	0.66	1.09	97.5
Clinton	EATO8140	4.16	Eaton	Portion of Savannah, IL	Urban	99	2005	1.00	1.00	211.4
							2004	0.00	0.00	0.00
							2003	0.07	1.00	61.0
Dubuque	GALW8314	13.8	West Galena	Rural areas North of Galena	Rural	167	2005	2.17	2.28	448.9
							2004	1.32	1.43	123.3
							2003	3.09	3.16	45.8
Dubuque	FRLK8343	13.8	Frentress Lake	Frentress Lake Area	Rural	219	2005	0.07	1.00	639.2
							2004	0.01	1.00	189.0
							2003	0.84	1.06	88.6

Boldface, highlighted number is the value for which circuit was given worst circuit status.

**[411.120 b) 3) J):**

A statement of the operating and maintenance history of circuits designated as worst-performing circuits; a description of any action taken or planned to improve the performance of any such circuit (which shall include information concerning the cost of such action); and a schedule for completion of any such action. (The jurisdictional entity may decide, based on cost considerations or other factors, that it should take no action to improve the performance of one or more circuits designated as worst performing circuits. If the jurisdictional entity decides to take no action to improve the performance of one or more circuits designated as worst-performing circuits, the jurisdictional entity shall explain its decision in its Annual Report).

**Dubuque Zone**

*Circuit GALW8314 (Menominee circuit)*

This circuit was classified as a worst performer because SAIFI was 2.17 and CAIFI was 2.28.

These figures were primarily driven by two tree-related outages, during storms with high winds on June 5 and Aug 9 which locked out the substation recloser when entire trees fell into the line. One outage required 10 hours and the other 6 hours to fix. The circuit was trimmed in 2004, but a 10 foot clear zone does not prevent entire trees from falling into the lines. IPL feels the two circuit lockouts were due to events beyond our control.

Review of the other outages on this circuit showed seven were lightning-related. Although a different device was involved in each outage, lightning arresters have been added on certain taps on this circuit to decrease the frequency of lightning outages in the future.

Other outages show no common causes and IPL plans no additional follow-up actions at this time.



### *Circuit FRLK 8343*

This circuit was classified as a worst performer because CAIDI was 639.2 minutes. SAIFI was very low at 0.07. CAIFI was only 1.0. The CAIDI value is driven by a tree-related outage to a single transformer serving twelve customers during the June 5<sup>th</sup> storm which has been mentioned in other areas of this report. This outage lasted 764 minutes (12.7 hours).

Only three other outages occurred on this circuit in 2005—two transformer failures, and one probably wildlife-related. All four outages affected just one transformer with one customer each. These outages were restored in the 1.5 to 3.0 hour time frame. However, since the storm outage affected 12 out of the 15 people on this circuit, it drove the CAIDI to an extremely high number. This is an extreme event and IPL plans no follow-up actions.

### *Clinton Zone*

### *Circuit MTCL8117*

This circuit was designated as a worst performing circuit due to a CAIFI of 2.47 and SAIFI of 1.16. These values were driven primarily by a single downstream recloser which locked out three times due to large storms. First, a storm created floater from a broken insulator and locked-out recloser. The insulator was replaced. Second the extreme winds of June 5<sup>th</sup> discussed earlier broke off two poles which were replaced. Finally, ice and wind caused galloping and tore down some lines. These have been repaired.

Patrolling shows this line is in decent shape and the outages do not reflect poor line condition. Historical reliability performance also indicates this. While performance of this section will continue to be monitored through IPL's regular outage review process, no further follow-up action is planned at this time.

### *Circuit EATO8140*

This circuit is designated as a worst circuit due to a CAIDI value of 211 minutes. This circuit is a 4.16 kV circuit with no backup sources available to any of the customers served by it. There was a single outage event on August 12<sup>th</sup> at 3:45 am, caused when a broken limb damaged the line. This damaged the primary line and locked out the substation recloser. The 18 customers upstream of the damage were restored to service in 120 minutes. Due to the location of the damage, the majority of the circuit (83 out of 99 customers) remained out of service until repairs could be completed, a total of 229 minutes.

Given the time of the outage, the repair work which needed to be done, and the fact that this is a circuit which has no alternate feed, the restoration time for this event is not excessive. Historical reliability performance for this circuit indicates no systemic problems. No further follow-up action is planned.

## **[411.120 b) 3) K]:**

**Commencing June 10, 2001, tables or graphical representations, covering for the last three years all of the jurisdictional entity's customers and showing, in ascending order, the total number of customers which experienced a set number of interruptions during the year (i.e., the number of customers who experienced zero interruptions, the number of customers who experienced one interruption, etc.).**

Count of Interruptions	2002		2003		2004		2005	
	Number of Customers	Percent	Number of Customers	Percent	Number of Customers	Percent	Number of Customers	Percent
0	6,758	60.70%	3,187	30.10%	5,729	54.70%	6,361	58.23%
1	1,578	14.20%	3,759	35.60%	3,304	31.50%	3,572	32.70%
2	1,274	11.40%	2,271	21.50%	1,083	10.40%	740	6.77%
3	1,092	9.80%	912	8.60%	297	2.80%	170	1.56%
4	313	2.80%	356	3.40%	39	0.40%	43	0.39%
5	88	0.80%	85	0.80%	11	0.10%	36	0.33%
6	6	0.10%	1	0.00%	14	0.10%	2	0.02%
7	24	0.20%		0.00%	1	0.00%		
8	1	0.00%		0.00%				
9	1	0.00%		0.00%				
Total	11,135	100.0%	10,571	100.0%	10,478	100.0%	10,924	100.0%

In 2005, over 58% of IPL Illinois customers experienced no sustained interruption.

Over 90% experienced only one or no interruptions. That figure is better than any of the previous reporting years despite the significant storm on June 4<sup>th</sup> and 5<sup>th</sup> which caused 22% of the number of customer interruptions.

**[411.120 b) 3) L):**

**Commencing June 10, 2001, for those customers who experienced interruptions in excess of the service reliability Targets, a list of every customer, identified by a unique number assigned by the jurisdictional entity and not the customer's name or account number, and the number of interruptions and interruption duration experienced in each of the three preceding years, and the number of consecutive years in which the customer has experienced interruptions in excess of the service reliability Targets.**

No IPL Illinois customers exceeded the service reliability targets as defined in 411.140 b) 4) in 2005.

As agreed upon by the Illinois electric utilities and the ICC in a letter dated April 21, 2004, the analysis to determine individual customer electric reliability includes all outages, controllable and uncontrollable.

**[411.120 b) 3) M):**

**The name, address and telephone number of a jurisdictional entity representative who can be contacted for additional information regarding the Annual Report.**

Any requests for additional information should be directed to:

Val Akin

PO Box 769

Dubuque, IA 52001-0769

(563)-584-7421

valakin@alliantenergy.com

## Appendix A – Supplement to IPL 2005 Electric Reliability Report

### 2002 - 2005 IPL Illinois Outage Data by Cause

Cause Category	Year	Number of Outages	Percent of Total	Customer Minutes	Percent of Total Minutes
Weather - Lightning	2002	127	48.70%	408,030	41.80%
	2003	63	24.90%	230,014	20.10%
	2004	35	17.70%	154,304	30.00%
	2005	80	32.70%	267,683	27.90%
Weather - Other	2002	14	5.40%	171,041	17.50%
	2003	10	4.00%	151,465	13.20%
	2004	9	4.50%	14,200	2.80%
	2005	15	6.10%	276,388	28.80%
OH Equipment	2002	24	9.20%	66,497	6.80%
	2003	29	11.50%	104,697	9.10%
	2004	19	9.60%	10,647	2.10%
	2005	39	15.90%	47,041	4.90%
Tree Related	2002	24	9.20%	124,956	12.80%
	2003	46	18.20%	434,803	37.90%
	2004	34	17.20%	165,379	32.10%
	2005	40	16.30%	267,870	27.90%
Public/Other	2002	8	3.10%	72,663	7.40%
	2003	3	1.20%	6,753	0.60%
	2004	11	5.60%	63,667	12.40%
	2005	8	3.30%	56,343	5.90%
Animal Related	2002	47	18.00%	31,243	3.20%
	2003	60	23.70%	33,352	2.90%
	2004	57	28.80%	48,707	9.50%
	2005	36	14.70%	20,274	2.10%

Cause Category	Year	Number of Outages	Percent of Total	Customer Minutes	Percent of Total Minutes
UG Equipment	2002	6	2.30%	4,607	0.50%
	2003	2	0.80%	10,177	0.90%
	2004	4	2.00%	4,214	0.80%
	2005	4	1.60%	2,722	0.30%
Unknown	2002	8	3.10%	6,485	0.70%
	2003	19	7.50%	64,829	5.70%
	2004	18	9.10%	12,175	2.40%
	2005	13	5.30%	6,352	0.70%
Utility Error	2002	0	0.00%	0	0.00%
	2003	4	1.60%	45,350	4.00%
	2004	4	2.00%	30,390	5.90%
	2005	1	0.40%	1,584	0.20%
Intentional	2002	1	0.40%	2,192	0.20%
	2003	16	6.30%	15,185	1.30%
	2004	5	2.50%	9,429	1.80%
	2005	7	2.90%	2,137	0.20%
Transmission-Substation Equip.	2002	2	0.80%	88,593	9.10%
	2003	1	0.40%	49,496	4.30%
	2004	2	1.00%	1,482	0.30%
	2005	2	0.80%	11,033	1.10%
Total	2002	261	100%	976,307	100%
	2003	253	100%	1,146,121	100%
	2004	198	100%	514,594	100%
	2005	245	100%	959,427	100%